

## CHARACTERIZATION OF RURAL PROPERTIES WHICH PRODUCE CHEESE IN THE CITY OF ANGATUBA, SP

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**Abstract:** milk production chain is one of the most significant Brazilian agribusiness and, before becoming one of the most important, it has undergone an intense restructuring that influenced its performance. This transformation was due to the higher market opening, and later, to the constant searching for quality, so, this ensures that the sector had to adequate itself to the market requirements, which is globalized and competitive. Despite its development, the sector still presents some problems, because the producers who have low specialization, have difficulties attending the established requirements and, many times, give up their activity, or end up in the informal market. The informal market of raw milk and its derivatives can bring risk to public health, because these products don't go through any inspection and sanitary control. In order to analyze the current situation of Angatuba, SP, related to cheese production, this work was developed and had the aim of characterizing rural properties that produce cheese in the city. For this purpose, visits were carried out on these properties and a questionnaire was applied to collect production data. From the obtained results, it was found out that cheese production conditions aren't adequate in most properties, and it was also verified, in relation to installations, that only property F produces within the minimum necessary conditions. Analyzing this situation, it's conclusive that five properties could regularize under the Law of Handmade Product, however, property F, even presenting minimal requirements in relation to the installations, could not adapt to this, by the fact that it doesn't have its own production and only acquires raw material from third parties, so it would have to adapt to another regulation, such as o SIM, SISP or SIF.

**Keywords:** Informal Trade. Inspection. Dairy Products.

### 1. Introduction

Milk production chain in Brazil has relevance both economically and socially, because it generates jobs and income. Vilela, Leite, Resende (2002) report that this segment generates more than three million jobs in primary production and adds over R\$ 6 billion to the value of national agricultural production and its being practiced in more than a million rural properties.

This segment is evolving, but it presents difficulties in quantity and quality, because specialized producers have higher productivity, but they are a minority; while many are farmers with low skills and therefore low productivity. As a consequence, there is little investment, causing problems throughout supply, such as: low technological improvement, lack of animal sanitary control, inadequate hygiene during milking and storage and transportation. The consequences of these deficiencies on milk production are observed in the low productivity of national herd (only 1219 liters/ cow/ year in 2005) and the low quality of produced milk. (SANTOS; FONSECA; 2007 apud NERO; VIÇOSA; PEREIRA, 2009).

Each day, the market becomes more demanding and competitive, so the quality is a determining factor in food production. Standards and requirements have been discussed and

deployed to production, to bring quality improvements, but some producers, especially the small ones, aren't adapted to the requirements, and so, they end up in informal trading.

Producing and negotiating dairy products informally carries a risk to the population, because these products do not undergo health inspections and sanitary control, and may transmit disease to their consumers. To ensure the quality of these products, it is necessary to regularize these properties through the Inspection Service, for them to be appropriate and to have the authorization to negotiate thereby, avoiding the problems associated with the consumption and marketing of products produced without any control.

The Inspection Service in Brazil was divided into three levels: federal, state and municipal, with some ramifications of legislation, but all of them with requirements and demands for production of animal products. The adequacy of producers, who work in the informal market to these regulations requires, first of all, knowledge of the conditions where they operate in, so it can be verified which is the best option for its formalization.

In order to analyze the current situation in Angatuba, SP, of cheese production, this study aimed to characterize rural properties that produce cheese in the city, in order to know the reality, and later, suggest improvements to the production system, in order to ensure safety in the consumption of these products.

## **2. METHODOLOGY**

### **2.1 Screening of Properties**

Visits were made to the Agriculture House of Angatuba in December 2011, to the Cooperativa Agroindustrial Mista of Angatuba (COOPAN) and to the Cooperativa de Laticínio Angatubense (Colan) in January 2012, in order to develop a screening to locate rural properties that produce cheese in Angatuba city. In these visits, the location data of six properties that produce cheeses in different districts of the city were obtained and an exploratory research was conducted.

### **2.2 Visiting the Properties**

In July and in August 2012, six properties located in Capim, Batalheira and Ribeirão Grande were visited. These were designated according to the visited in property A, B, C, D, E and F.

Each farm received a questionnaire with 14 different questions (open and closed) concerning the origin, volume, place and manner of obtaining the raw materials which are used, location of product manufacturing, equipment, packaging and labels used, types of produced cheeses, marketing of the product and level of training of those involved in the activity. In addition to the questionnaire, the observation of the site was also important to obtain and analyze the results.

In possession of the data obtained through the questionnaire, the conditions of each property were compared to the current legislation, in order to verify the possibility of the properties obtaining a production report by the Inspection Serviceto belegally constituted.

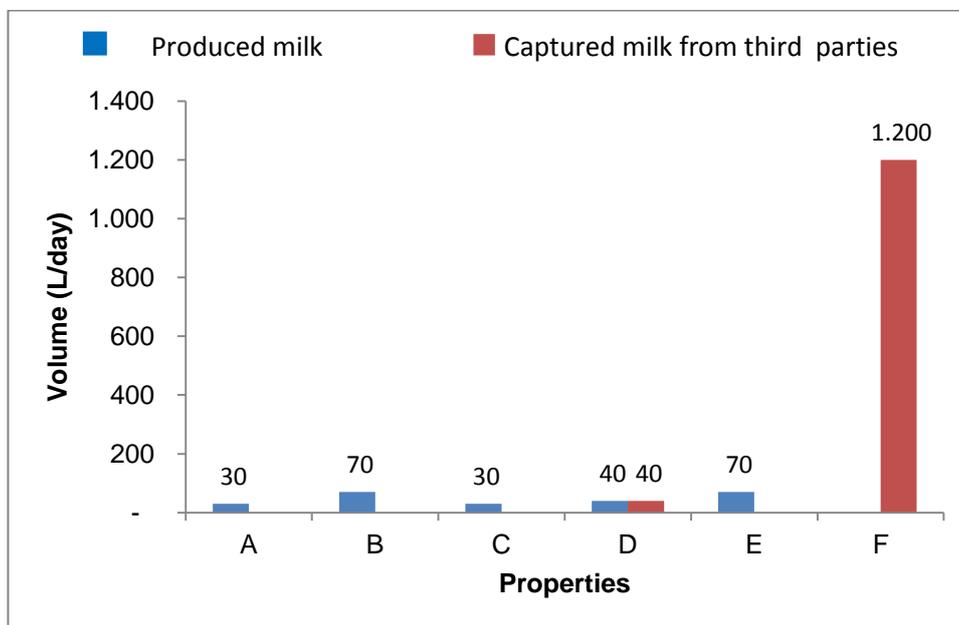
### 3. Results and Discussion

During the visits it was verified that the six properties are operating in the informal market, in other words, they are not recorded in any of the organs of Inspection Offices, and this is a necessary requirement to this activity in the country. So, it was confirmed that in the city there are no rural properties that produce cheese, which are formally registered for this activity.

Based on these results, it was found that four properties(A,B, C, E) produce the milk used as raw material for manufacturing their cheese, a property (D) produces the milk that it uses, but also, purchases a portion from different producers and property just purchases because it doesn't have its own production.

In relation to production volume/ purchase of raw material, it is observed, in Figure 1, that the properties A and C produce 30L of milk, the properties B and E produce 70 liters/day, the property D has a division between production and purchase, which 40 liters of milk/day are produced in the property and the other 40 liters are acquired from third parties and finally the property F purchase from third parties a volume of 1200liters per day.

**Figure 1 – Origin and volume of milk per property (Source: own elaboration, 2012)**



Small producers who intend to manufacture and market products of animal origin, as handcrafted, must adapt to the specific actions of Law no.10.507/2000 (SÃO PAULO, 2000). To be considered a handcraft production, the raw materials would come from their own production

up to the maximum volume of 300 liters/day, in case of dairy products, the purchase from third parties are allowed up to a limit of 50% of the raw material quantity of its production.

Based on origin and volume of raw material, it can be concluded, that out of six analyzed properties, four of them (A, B, C, E) fit in the proposed legislation, both D and F are not suitable for this, because property D doesn't respect the 50% purchase limit of quantity of raw material by production, in other words, it purchases the same volume that it produces; and property F, by not having its own production, it can't be considered a handcraft production.

In the properties that have their own production of milk, all of them carry out the milking by hand. It's known that in the Normative Instruction no. 62 (IN 62) (BRASIL, 2011), that takes care of requirements for raw milk production, there isn't an obligation for the use of milking machines, however, according to Mattioda; Bittencourt, Kovaleski (2011), the producers that perform hand milking, in an inadequate way, can allow the transmission of micro organisms, causing mastitis, in addition to increase in numbers of somatic cell per herd. Scalco (2004) presents some practices to obtain the quality of milk, being one of them the hygiene of the milker that needs to have clean hands to avoid the cows contamination and their milk.

Mattioda; Bittencourt, Kovaleski (2011) also stand out that the use of milking machine does not spare the care of sanitation, which is a determining factor for the achievement of quality.

As a result of the use of raw material with low quality, the cheese production is adversely affected because its shelf life is reduced and can present undesirable flavors. Nascimento; Raszl (2012) believe that for the quality and safety of dairy products to be guaranteed, first of all we need to know the production process, which is currently one of the major barriers to producing quality milk.

Another aspect that also affects the quality of milk is the installations, because of the possibility of contamination. According to IN 62 (BRAZIL, 2011), the milking place should be equipped with a cover and floor for easy cleaning and waste disposal and pest control and storage conditions should be observed, these are determining factors to keep the milk quality until it is used.

Knowing these factors, it was found out that in the properties A, B, C, D and E the milking place has coverage, but only on the properties A and B there is a floor, while the other presents a "soil floor", in other words, it is directly in the soil. Unlike in the work of Nassu et al (2007), which evaluated the Good Agricultural Practices for the production of curd cheese, it was observed that local milking of all properties surveyed relied on the concrete floor, a basic requirement for cleaning the local.

After being obtained, the milk must remain in temperature that controls the multiplication of micro-organisms, as evidenced by Citadin et al (2009), in assessing the conditions that affect the quality of raw milk produced in the countryside of Paraná. In this study it was found out that only property F has a cooler (Figure 2), an equipment to conserve the milk, but on three properties (B, C, and D) the milk is kept in horizontal freezer, but it doesn't remain in

sufficient time to freeze the product, only by lowering the temperature and on two properties (A and E) the milk is stored in the refrigerator of the house.

**Figure2 – Cooler of property F (Personal file, 2012)**



After the milk is obtained for the cheese manufacturing, there are other requirements, as established by SAA Resolution No. 30/2001 (SÃO PAULO, 2001). In this resolution, appropriate characteristics are specified in relation to the place destined to cheese production, material equipment, packaging and labels.

The general provisions of the establishment destined to production of handcrafted animal products, determined by the Resolution, are related to location requirements, construction features, lighting and ventilation sources, pest control, operational flowchart and segmentation areas for different activities, nature of equipment and utensils used, and so on, which were not investigated in this study. All of these requirements have the aim of ensuring the quality of dairy products.

In relation to the location, all the visited properties produce cheese on its own property, therefore they are in accordance to the Law of Homemade Product, but on the characteristics of the building, four properties (B, C, D and E) are not in compliance with the law, because they produce the cheese in the kitchen of their homes, and only two properties (A and F) have an exclusive place for the production of cheese. None of the properties follows an operational flowchart, because they have no segmentation of areas for different activities.

Also, in relation to the characteristics of building, it was found that, in all properties the places of preparation of cheese present themselves with impermeable floor, required by Resolution SAA No. 30/2001 (SÃO PAULO, 2001), which facilitates cleaning the place. The tiled walls were observed only in properties E and F (Figure 3), while the liner was present on properties B, E and F. The six visited properties relied on natural and / or artificial lighting, but in

none of them there was protection in the lamps, which can cause physical contamination in the products if they burst.

As for pest control, requirement required to prevent contamination of products, is performed only in property F, which uses protective screens on the door and windows to prevent the entry of insects.

**Figure 3 -Mozzarella cheese of property F on the tiled workbench (Personal file, 2012)**



The situation of the place, where the cheese is produced, also, can be identified through Table 1.

**Table 1 – Characterization of local to elaborate cheese per property**

Requirements	Properties
Ceiling	B, E e F
Impermeable concrete floor	A, B, C, D, E e F
Tiledwalls	E e F
Pestcontrol	F

Source: ownelaboration(2012)

In addition to the installations, there are requirements in relation to the nature of the equipment. These must be appropriate and stainless material to avoid contamination in the product, which was not observed in any of the analyzed properties, because they used inappropriate equipments, such as kitchen utensils, including wood, which is prohibited. In relation to specific equipments, only property F has a cold room (Figure 4) to store the cheese.

Figure 4 – Cold room of property (Personal file, 2012)



The chapters XI and XII of Resolution feature on the packaging and labels respectively. In this aspect, it was found that producers use as packaging unlabeled plastic bags, in other words, without any information referring to the product.

Among the types of cheese produced in these rural properties (Table 2) it appears Mozzarella, also presented as "Purungo", "Palitinho" and "Nozinho", containing the same mass, but shaped differently and "Minas Frescal". It was observed that from the volume of obtained milk by third parties' production or purchase, the quantity of cheese varies, because, like most properties produce more than one type of cheese, there is no specification in terms of volume and patterns of products.

Chart 2 – Kinds of produced cheese per propriety

Proprieties	Kinds of cheese
A	Mozzarella, "Purungo" e Minas Frescal
B	Mozzarella e "Purungo"
C	"Purungo"
D	"Purungo"
E	"Purungo" e Minas Frescal
F	Mozzarella, "Purungo", "Palitinho", "Nozinho" e Minas Frescal.

Source: Own elaboration, 2012.

The cheese, which are produced by the six properties are sold in the groceries and butcher shops of the city or even to dealers (middlemen) as street markets sellers, but, they are usually sold directly to consumers. The producers claim that all cheese produced are sold, or have significant demand, even if sold in the informal market, since it was noticed that none of

the producing properties in Angatuba have the registration with the Inspection Service, whether municipal, state or federal. A study by Sousa (2005), held in the city of Jacareí, SP, points out that the 465 of interviewees who claimed to consume dairy products, 136 consume some product (milk and / or derived) from informal origin.

Through these visits and the questionnaire, it was noted that producers are aware that they are acting in the informal market and two of them had the opportunity to know the requirements by the law, through courses offered by the Union Rural of the city.

Only producers from D and F properties reported the intention to regularize, but they still maintain in informal market due to bureaucracy, lack of support from Angatuba City Hall and lack of capital to invest in the activity. The study about informal market of homemade producers in the west region of Santa Catarina, conducted by Dorigon (2010), reveals that, in the case of cheese producers, the decision in continuing on informal market does not give only by financial constraints, but also, in order to avoid losing market due to the pasteurization of milk, because they believe that this process mischaracterizes the product, as colonial or homemade, to the point that the consumers don't recognize them as such and identify them as industrial.

Although there is a market for informal products, as demonstrated in this study and other ones, because of believing that this is a natural product, the production in non-registered establishment and therefore not monitored, can lead to serious health risks to population and, as seen in this study, most of the analyzed properties had no specified minimum conditions required by law for production and marketing of cheese.

#### **4 FINAL CONSIDERATIONS**

The development of this work has shown the conditions under which the cheese is produced in the city of Angatuba, SP, revealing that these conditions are not appropriate in most of evaluated properties, it was verified that property F produces only on minimum conditions necessary in relation to the installations. This has a place dedicated exclusively to the production of cheese, containing liner, waterproof flooring, tiled walls and pest control.

As the properties are in informal situation, also, it was made an analysis for their suitability to current regulations and best suited to the situation of these producers would be the Law 10.507/2000 for handcraft producers. Five properties (A, B, C, D and E) could regulate under this legislation since they have made investments in installations, equipment, or even increasing the production to decrease purchase from third parties, as is the case of property D. But, one of them, property F, even obeying the minimum requirements in relation to the installations, would not fit to the Law of Handcraft Product by not having its own production and therefore, would have to fit under other regulations, such as the SIM, SISP or SIF, depending on their objective and scope of marketing.

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